

## **RAW SEQUENCE LISTING**

**The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.**

Application Serial Number: 10/790,914A

Source: 1FW16

Date Processed by STIC: 8/3/05

# ***ENTERED***



IFW16

## RAW SEQUENCE LISTING

DATE: 08/03/2005

PATENT APPLICATION: US/10/790,914A

TIME: 14:58:46

Input Set : A:\UAB17404.ST25.txt

Output Set: N:\CRF4\08032005\J790914A.raw

3 <110> APPLICANT: Qi, Fengxia  
 4       Caufield, Page W.  
 5       Chen, Ping  
 7 <120> TITLE OF INVENTION: MUTACIN I BIOSYNTHESIS GENES AND PROTEINS  
 9 <130> FILE REFERENCE: UAB-17404/22  
 11 <140> CURRENT APPLICATION NUMBER: US 10/790,914A  
 12 <141> CURRENT FILING DATE: 2004-03-02  
 14 <150> PRIOR APPLICATION NUMBER: US 09/627,376  
 15 <151> PRIOR FILING DATE: 2000-07-28  
 17 <150> PRIOR APPLICATION NUMBER: US 10/047,676  
 18 <151> PRIOR FILING DATE: 2002-01-14  
 20 <160> NUMBER OF SEQ ID NOS: 21  
 22 <170> SOFTWARE: PatentIn version 3.3  
 24 <210> SEQ ID NO: 1  
 25 <211> LENGTH: 168  
 26 <212> TYPE: DNA  
 27 <213> ORGANISM: Streptococcus mutans.  
 29 <400> SEQUENCE: 1  
 30 atgtcaaaca cacaattatt agaagtcctt ggtactgaaa cttttgatgt tcaagaagat       60  
 32 ccaacagata ctactattgt ggcaagcaac gacgatccag atactcgttt ctcaagtttg       120  
 34 agtttaacag gggtgaaaaa tcttagtttc aatagttact gttgctaa               168  
 37 <210> SEQ ID NO: 2  
 38 <211> LENGTH: 24  
 39 <212> TYPE: PRT  
 40 <213> ORGANISM: Streptococcus mutans  
 42 <400> SEQUENCE: 2  
 44 Phe Ser Ser Leu Ser Leu Cys Ser Leu Gly Cys Thr Gly Val Lys Asn  
 45 1               5                       10                       15  
 48 Pro Ser Phe Asn Ser Tyr Cys Cys  
 49               20  
 52 <210> SEQ ID NO: 3  
 53 <211> LENGTH: 15567  
 54 <212> TYPE: DNA  
 55 <213> ORGANISM: Streptococcus mutans  
 57 <400> SEQUENCE: 3  
 58 aaatttgttt ttataactaa aagcgggaat gattcaaaac taaaaaagat aaacgaagaa       60  
 60 ttgaaaaagt gatataatag cacagaagag ggcctttata atgaaaggag actattttga       120  
 62 aagtaaataca atcaatggaa ttaggtgaac ttatcgaga attaagaatt gctagaggtt       180  
 64 tgaagataaa agatatagct tgtaaaaatc tgtccaagtc acaactctct agatttgaaa       240  
 66 atggacaaac catgttggca gctgataaat tgctattagc tatttcggga attcatatga       300  
 68 gtttttcgga atttgatat gctttgagcc attatgagga gaggatgttt ttcaaaaggg       360  
 70 gtaataagtt atcagaatta tatgtccaga aagatatcaa aggattaaaa aagttattag       420  
 72 aatttaataga caatcatgag gtatttgatg tctacaatcg tttaaataaa ttggttattc       480

## RAW SEQUENCE LISTING

DATE: 08/03/2005

PATENT APPLICATION: US/10/790,914A

TIME: 14:58:46

Input Set : A:\UAB17404.ST25.txt

Output Set: N:\CRF4\08032005\J790914A.raw

```

74 aagttactat tcatttgcta gatactgatt acataatatc agatgatgat aagaattttt 540
76 taacaactta tctatataat attgaagagt ggactgagta tgaactttat atctttggaa 600
78 atactatgtc tatattgtca tctgatgatt taattttttt gggaaaagct tttgtagaac 660
80 gtgataagtt gtatatactc ctctctagtc ataagaaaaa tgcagagtta acttttttaa 720
82 atttaactctt aattttgctt gaaagaaaaa aattatatca agcaatctat tttgtagaga 780
84 atttagagaa attattaaat taccaagata tgtttgcaat aacattttta aaatttttaa 840
86 aaaaaattat tacttacttt catgataagt cagtagatat gtctgaatta gaacattata 900
88 ttaatatagt tgaagaaata aatcctacga ttgcttcaat tcttaaatct aatttgaatc 960
90 agctttttatc aagtttttagc cattaaagcc atcttgataa attttatatc tttcatattc 1020
92 attaaatgtg gagataatga aaaagcaacg gttatgctat cgctgctttt tttgtgatta 1080
94 gaagctatgt tatcatggag ttatagtaat gaaacatagt gacagttcat catttcttat 1140
96 tataaaagtg gtaataagag aagtggtaaa caaagagtta gtaaaataat acgtttaacc 1200
98 ataataatttc ctcttttaat ttattataag attcaaaaag gtaataattcc tatatttgca 1260
100 aatatgggat aaaataattt taaaaaagca gatttgcaat tttaaaaaaa atagaggcta 1320
102 atggtggtat tatattattg taaatatatg ttactcagt aatagtgatt tactattaca 1380
104 acagatttttg ttgttatctt agatatttct gctagcatta gttatctgta gatgtactac 1440
106 ttaataagta tataattata attatataat aactattatc agattaccgt taaaagtttt 1500
108 ctgatatgct tctactgaac aatttacgtt cagttacaca catgaaaaag gaggatatta 1560
110 tgtcaaacac acaattatta gaagtccttg gtactgaaac ttttgatgtt caagaagatc 1620
112 tctttgcttt tgatacaaca gatactacta ttgtggcaag caacgacgat ccagatactc 1680
114 gtttctcaag tttgagttta tgttcattag gatgtacagg ggtgaaaaat cctagtttca 1740
116 atagttactg ttgctaagtt gtacaaaaga tttagattgt gtcgcatgtc agcggcacaa 1800
118 tcttttgata ttagagatat taaatatgtt aaacacacaa ttattagaag tccttggtag 1860
120 taaaactttt gatgttcaag aagatttatt tgagtttaat ataacagata ctattgtact 1920
122 gcaggttagt gatagtccag gtactcatag taaagtgggt agtttcagta tctgtcctcc 1980
124 tcgaaagacc tccgtcagtt tcaatagtta ctggtgttaa ctataaatta tacttaaatt 2040
126 gataggaaac ttggtcatga cattatcata tgttgatatt ggaagagaat caaatttata 2100
128 aagacaatta aatctaaatt tgatgaatat ttagatgaat tattactagg ttgacagtca 2160
130 tgttaggaga agagatgaac gattttcaat ttcaagatta ttttatgtac agaaaaccat 2220
132 taggcaactt ttctaatttt cttagtataa ctgatatgat ggatcctatt gaattattac 2280
134 ataatgatcc gatatttgct gaaggggtat atttggttc cccatctctt agatcatcta 2340
136 taaataaatt agagaatcag attgcaagta ctaaggaaaa aaagaatgca aaagagacta 2400
138 tttttcaata ctatgccgt tataacacga gatcaactcc gtttggttg ttttcgtcca 2460
140 tcggaatagg tgggttttgc aaccacccta ggaaagagaa atcttgttat gaaaaatctg 2520
142 ttaatgttga tcttttttgg gcttataaag tagcagataa actagaaagt atgctgaaa 2580
144 ttttaaatac tttaaaagta gttgctaata atgctttgca aaagtcaa atgattttggc 2640
146 ttttagatac acgaagtc at tttggactta tgaattcacg ttcagatatt cgtgaggaca 2700
148 ttacagttaa gtctaatacag cttatagatt atgttattaa ttgcacagaa gaaccaatta 2760
150 gctatcaaac attaatgtat gatattgccg agaaattctc tcaatctagt gatgatgtaa 2820
152 aagaatattt gcaaacatta attaaagagg agttttta atactgaattg aaatttagtt 2880
154 tgattgatga taatcctttg gattggttta ttaatatattt agaaagagat caaaataact 2940
156 cagaattact tgaagagttg actgaaataa aggcaatgat tcaagattat actgaccgta 3000
158 acataggtga aggtacaat tcgatttttag ctctagaaaa taagatgagc caaatagtaa 3060
160 aagccaacgc atacctgcga gttgatcttt atgatcatgc agagctgaag tttagcgaac 3120
162 ataccaagag ttctcttcag aatattttga aagtactaag ttctttttcg tcagctgtta 3180
164 atagtcaaaa agaaattaaa aattatcatg agaaatttat tgccaggtat ggatacagac 3240
166 agttagtacc tcttcaatta cttttgaatt ctactagtgg acttggtttt ccaaaaggg 3300
168 atagtcaaac agaagtttct aaacaaaata atgaagatag taaaaatcaa aaaataatag 3360
170 aatttttaca gagaaaattt gaaaaagctt taagagatgg taaagaaatt attttgagt 3420

```

## RAW SEQUENCE LISTING

DATE: 08/03/2005

PATENT APPLICATION: US/10/790,914A

TIME: 14:58:46

Input Set : A:\UAB17404.ST25.txt

Output Set: N:\CRF4\08032005\J790914A.raw

```

172 atgatgattt aaaagattta aattttgaca cggaacagca aatatcagga gaattatatt 3480
174 gtttctacaa ttttaaaagt aaaaagctag aggttagtag tttaggtgtc tcacagatgc 3540
176 ttggaaatac ttttgacgt ttccattcta aattgccgaa tacgatagtc acaaaaaatg 3600
178 taaataagac gaaagaaatt ttactgagg cttatccaaa tactattatt actcaattaa 3660
180 atgaagtgcc atattttggg agaggtggca atattatgat tagtaatagc cttaaaagtc 3720
182 accagttgga attgaggaac tataactata aaaaagagat gagtatcaat gatatttatg 3780
184 tacgtgcaac cagtgaggag ttatatTTTT attctaagaa atatgagaaa agagttattt 3840
186 ttgtgatgaa taatatgttt aattatataa atggttctaa actcttacgt tttttactag 3900
188 aagtttcaaa ttctgatttt caaaatatta ccccgattac gcttggtagt ctggattctt 3960
190 ataatacatgt gcccgctatc atttataaag atattattat taaaccggaa acatggaaca 4020
192 ttagaaaatc tgaagctaag acttttagatt ctctcaaaaa ttggctaact aataataatg 4080
194 ttccgccttt tgtacggatg aaatatactg atcaaattat ttatttagat ttgagtcgga 4140
196 ctattgattt aactatgcta ttccagagta tcaaaaaaca tagcttcata caattattag 4200
198 atgttcattc agtatgtaca aacgatacgg agattttaga attagttgtt ccttttacia 4260
200 gaagtgatgt taacgctcac cagatttatc attatgctca gaatatttat actttggagg 4320
202 attcaggtag taaagaaaaa tatttttacg ctaaaattta tgtgaataaa caacgacaga 4380
204 cctctttcct acaaaaagag tatcctttat tattaaata tttgaaactc ccagaaaact 4440
206 tacaatggtt ctatattaga tataaagatg atggaaaaga cagcatagct ctcagaatca 4500
208 gatatgtaga agataaacia ttagtccaac ttatttcacg ctttatagag tgggcaacia 4560
210 aagcacggaa aaatatccaa atttcagggt atgaaattag tgaatatatc cctgaatcag 4620
212 caagatatgg agggaaaaaa tattcttcaa ttattcattc ttttttctat tatgatagta 4680
214 ttttggaatt gcttttacag aagaagcag aacaaactat tgaagtaaga acatctctca 4740
216 gtattattcg tatgttttta atgatgaat taagcttaca agaccagcag aaactcataa 4800
218 agaatttatt tgatggaaaa cataaactta aatatgaaaa agaatatcat aattcaataa 4860
220 gtttattact tgacaattta tgtacaaaaa atcagacaga tgaagctgat attttctgtg 4920
222 taatgaatat gaaaaaatc actgaaaaaa ttagctcagt tcttaaaaca aaggacttaa 4980
224 caacagattg gcagagaatt ctagggaagt taattcatat gcgatgtaat cgagtatatg 5040
226 gaattaacag tgagttagaa agaaaaacia tgtttattgt tgacaaagtt attaatcaa 5100
228 aaagatatac ggatatgttt ttggagggtg gtaatgagac aaagtaaacy tgtcgaaaaa 5160
230 attaaagata ttctaactga gcaaacttat ttattcgatt atcaagaaat attaaaaaaa 5220
232 gtcagtcaag caaaacaaac agatttttgg aatttacttt ccttatcttc gggaataact 5280
234 tctttattaa tattttatca agagtatgag aatttagaag gagtaaactt aaagcagcaa 5340
236 aagcagtcac taattgggct tataagtcac tatattaatc aaatagcaga gaaatcctct 5400
238 ttatttgatg gtttagctgg ggtaggtttt gctattaatt atactcttaa taacggtaaa 5460
240 tattatcaaa aacttcttga acagattgac aacagactcc gtcagaatat tgaacggaac 5520
242 ctgtgcaact ataagaatga ggaatatgca aatcctatga attatgatgt agtttctgga 5580
244 aatgctggag tagctcgcta cttgatggaa agagaatcct ctgaagattg gcgaatagtt 5640
246 gaaatgattt tagaaacatt ttataaagct ttagagcaag gctggcgagt acagtcaaaa 5700
248 tatcaatttc tagagtctga aaagcagtat tatctagaag gaaatataaa tttcgggttg 5760
250 gctcatggaa tattaggacc tgcgacaatt atggctcttt atcaacgaag agaaccacia 5820
252 aatacaagaa atgctgagaa gcttcaagaa acttatcgac taataaaaag atacgccag 5880
254 gtaagagatg aagggttacg atggccaata cgatatgatt tgtttcgtaa agagggttct 5940
256 tttatattac gaaatggttg gtgttatggc gagaatggca tttataatac actttttctt 6000
258 atgggaaaag tactctcaa tcaggagatt tgtgaaactg ctcagaaagt tataccatcc 6060
260 atcataaaaag atgattatga gaaaatggaa agtccaacat tttgtcacgg gtttgctgga 6120
262 aaagcaaat tctttcttct gcaatatcaa agaactaaag aatcaatatt tttagttaaa 6180
264 gcagaagaag aaattgataa aatattaatt gtgtacaatt ctgaaaatat gtttggaatt 6240
266 aaagatatag aagataatat tgataatact ggagagagat taacttattg ggataatttt 6300
268 ggtcttctta gtggaactgt tgggtgttcta ttagttttga tggaaatattg taatattgta 6360

```

## RAW SEQUENCE LISTING

DATE: 08/03/2005

PATENT APPLICATION: US/10/790,914A

TIME: 14:58:46

Input Set : A:\UAB17404.ST25.txt

Output Set: N:\CRF4\08032005\J790914A.raw

```

270 aatgcccgaa aaattgcaga gtggaataaa atttttcttt tgacttaatt aactgaacgg 6420
272 agaaataatt atggaagaac aaaatataga gaaaaaaatt ctcttggtgcc taacaggttc 6480
274 tggagcattg ttagggatag ctgaatatat tacgtttttg actgtgctgt ttaagcatgt 6540
276 tcgagttatt gtctctgata atgctgcgaa gatgcttcct gttgctgcta ttacacaatt 6600
278 gtgtgagaaa gtgtatactg atgaagtttc ctttacagat aagcaaaaga atcacatagc 6660
280 ttttaactcgc tgggcagaca taacagttgt cttacctgct acagcaaata taattggaaa 6720
282 agttgctaatt ggtattgcag ataactttat gacaacaact cttctttctt ctagcaagcc 6780
284 agttttaatt tatccttgca tgaataatat tatgtgggaa aatccagtag ttcaaaaaaa 6840
286 tgttgaaagt ttatctggaa cccaatataa ggtaattggt ggacaagaat cagaatcttt 6900
288 tgaattagcc agtggaaaga tgaaaaagaa tattgcaatt ccaagtttgg atgaattgca 6960
290 acgagttggt ttagaaaatt tacaagaaga gaggtgaag tatgaagaag aaaggattac 7020
292 tagtaataat ctttctaact ttctttttct ttatcctaa agctaaagct gctgaatata 7080
294 caattatata aaataatagt gaacaaactg ttaatgactt gaataattta ggagttacag 7140
296 tcaatagcca tattgcggaa attggatata ttgaagctca aggagatggt aacattgatc 7200
298 agattaaaaa gctgtcaaat attcaaagta tccagaatat ggctgatata tcacagaata 7260
300 tcacgactag agttccttca acatatatta accagacaat acaattgcct cagctttttt 7320
302 cttatcagtg ggatatgcaa aaaattacta ataatggtgt ttcatattca ttaaataaag 7380
304 aaaatcgaaa aaatgtaaca gttgcttttag ttgattctgg gattgatgta gaccataatg 7440
306 cttttacagg aatgattgat agtcgttcaa aaaattttgt gcctgctgga ggatatgata 7500
308 atagtgaag cagtgaact ggaaatatta atgatattga tgataaaaaa ggccatggaa 7560
310 cagcagttgc tgggcaaatt gctgcaaatg gtcaaatctt tgggtgtgtcc ccaggaacga 7620
312 accttcttat ctatagagtt ttggaaaaa caaaatcaaa ggagtgtgtg attttaaaag 7680
314 caattattga tgcaacaaat aacggtgcta atgttattaa tctaagtttg gggcaatata 7740
316 ttaagattcc taatggtgat atttgggagt ctgccgaagc attaggatat aagtttgcca 7800
318 ttgattatgc cacaagacat aatgtcattg ttgtagcagc cacaggtaat gatggattaa 7860
320 gtgatgacaa cggagagggt aaaacttatt ataatagtca gcattcagga caagatatgt 7920
322 ctcaaatga cagggttgaa gattatcctt ctgttttacc taatgctatt gcagttggct 7980
324 cttctgataa taataatcaa agatcatctt ttagtaatta ctataatcaa tatcaggaca 8040
326 attttatttt ggctcctggt ggtggaacaa ctttactaga ccaatatggt caagaagagt 8100
328 ggtataatca gaaacttttt atgaaagaac aagtcttctc aacaagtaat aatggaaatt 8160
330 atgattatgc agatggtact tctatttcaa caggaaaagt ttctggagag cttgcagaaa 8220
332 ttattagtaa ctaccatctt caaggagatt cttcaaaagc tagaagtatt ctactaaatc 8280
334 aagttaatta tactagtgat ggttataaag aaataagcac ttacaaagct ttgctgaggt 8340
336 actaaatgaa gtggttagaa gttttgcaaa ttagtaaaaa agaaaaaatt ctttatctta 8400
338 ttggttgat attttcaatt atgacaggct taattactct acgaatcacc tacttactta 8460
340 agaatttagt tgacagcaaa tegtctttta ataatttgtt cttgtttctt gttttgggat 8520
342 tagttctttt tatcatagat gctggttcac agtatctaat ttcatlgatt ggtaatcaag 8580
344 tagtgtttaa cagtcgaaat aatatgtgga aaaaaatttc tgattggaca gatagtaaag 8640
346 atgattcttc tgaatggca ggcacctta ttaatgatag tgaactgata gaaaatttta 8700
348 taatttctac tattcctcaa tcaataaatt cagttattgt tggatcagga tccttagtta 8760
350 tgctatttgt tattaatagt aaaatgtctt tagaagttat agggatttgc ttgcttttat 8820
352 tgttcattat gcaacccttt tctagaatat taagcaaaat aagtaaaaga atccaggaag 8880
354 acaaagctga acttattaat attgcctcac agttgagagg acaagtcaaa acaataaaaa 8940
356 gctataatgc tcaagattat gcctttcaaa aatttgatga gcaaaatcgc caattatttc 9000
358 aagatatctt aaatagaata aaaattttta gcatttactc tcctttttta aatatcttaa 9060
360 ttctttttat gattataatt gttgtttggc taggaaatac agaagtacgt tcaggaaatc 9120
362 tcaactgtagg ttacagcaact atttttgttg ttatatgac acaattaatt aatccaatta 9180
364 tgcaattatc acaattagtt gctcatatgg ggatgcttaa tggcggcgtg gaacgtcttt 9240
366 tggagtataa tcaagctatt ccagaaaaaa atggaatcaa gaaaattgat gaaataatta 9300

```

## RAW SEQUENCE LISTING

DATE: 08/03/2005

PATENT APPLICATION: US/10/790,914A

TIME: 14:58:46

Input Set : A:\UAB17404.ST25.txt

Output Set: N:\CRF4\08032005\J790914A.raw

```

368 atatacggtt tgataatggt tcatttgctt atgataacca agaaaatatt attgaaaatg 9360
370 tgaatttaac ttttcaaaaa ggtacttata tttccattgt tgggtgaaagt ggagttggga 9420
372 aatcaacctt acttgatctt ttagaacata attatgtacc atcaaaagga cgaatcttaa 9480
374 taaacggaat agacttagaa gaattgaata ttaagacttt gcgaaataag ataagctatg 9540
376 tatctcaaga accaacaatt ctttctggga caattcgtga actattagac tttaatcagc 9600
378 aacagcatac agaaactagt ctttggaaatg ttcttgatac tgtagaatta tcagaactta 9660
380 ttagaaaattt acccgcgaaa ttagattcta aggttgatga atatgggtggg aacctctctg 9720
382 gaggtcagat gcaacggatc tcacttgcaa gaggattact gaaagcagga gatgttttat 9780
384 tattagatga atcttttgcc aatattgatg aagagacttg tcttaaaata aaattaaaaa 9840
386 ttgctgctta tgctgaatca cacaagcaaa ttgttattga agttattcat aatctaaata 9900
388 gaataactcc cagtagtata gtttaccgat tggctgataa aaaactagaa attttgagga 9960
390 gcggatttta atagaaaagt cgaagaaatc tgagtaaaag atcagtttct ggtcgaaaat 10020
392 taaatattgt gatataataa taagcttaaa atcaatattc ctaataattt gattttaagc 10080
394 tttttactat ttgatgagtt tttactcaag atcttttgat tttcctgata aagtccttaa 10140
396 atttgttttt tataactaaa gcagaaaagg aggatatcat aatggattat atgctagaga 10200
398 cgaaaaattt aactaaacag tttggtaagc aaacagcggg taaccaattg aatttgaaag 10260
400 ttgaacgtca ttcaatttat ggtttgctgg ggcctaattg ttccggcaaa tcaacaacac 10320
402 ttaaaatgat tactggaatg ctaagaaaga catctggtca cattcttata gacggacacg 10380
404 attggagccg caaggattta gaaaatatcg gggctctgat tgaatcaccg ccgctttatg 10440
406 aaaacctgac tgcgcggtgaa aatttaaagg taagaacctt gatgctgggt ttacctgata 10500
408 gtgcattga tgaggtttta aaaatagtgg atctaaccac cacgggtaaa aaaagagcag 10560
410 ggcaattttt tatgggcattg aagcagcgtc tgggtattgc tatcgactt ttgaactcac 10620
412 ctcaactttt gattctggat gaaccgacta atggacttga tctattgggt attcaggagt 10680
414 tgcgtaatct tattcggttc tccctcacac aaggaaattac agttattatt tccagtcata 10740
416 tcttatctga gattcagatg acagcggatc atattggtat cattgctaatt ggcgtactgg 10800
418 gttatcagga tagaattcac caagatgaag acttgaaaaa actttttact gatgtgggta 10860
420 tgagataccg aggaggtgag tgatatgctg ggcattgttc aggcagaaaag gttaaaactg 10920
422 aagcgaagta tggcgaagaa gttactagtt tttgccccca taatagctat tttatatggt 10980
424 tttatagcac ctgtggggta tttagtaaat aatgcttata attgggtggt tgtcatgatt 11040
426 tttccagggc tgctaacctt atttgctgct ttaataaata cttacgaaga aaaaaagctg 11100
428 cattatcgag cagtgtttcc tttgccatt tctttaagaa aattttgggt tgaaaaaatt 11160
430 tttataactg tttattatct taattttagt aatggagtac tttggataat tacagtatta 11220
432 ctgaatactt ttattttacc aaattatgga aaagactata cttatactgt tggagaatta 11280
434 gcactagctt ctttggttat aatagttact acactttggc aaattccatt ttgtctgtgg 11340
436 ctgacaaaaa gaatcggttt taccataacg ttgataatta atttaatgag taatttcatt 11400
438 ttgggagttg tttttgcaac tacttccctg tgggtggctt gtccatatag ttggggaata 11460
440 cgattaatgg taccattttt aaaaatacta ccgagtgggt taaaggcagg tatagcagga 11520
442 gctccatcat tgccaacaag tttttggagt atcggtatta gtttgtggtt agcgggttatc 11580
444 ttatttggtt gtttgacagt tttgagtga tcttgggttg aaaaacagga agtgaaatga 11640
446 tgattgattt attaaaagca gaaaatgtaa aataccgtca tactttttta ccatgggttac 11700
448 acctgatttt acctgttact acagctattg ttgttattgt ttatgggcta atgacgccga 11760
450 ctcaactctg ggctgatatt actggtgggt acttagaact attgggtata agttttccaa 11820
452 ttgtcattgc tgttatttgt gggaaatcag ttggactaga agtagagggt ggtcaatttc 11880
454 aagttatggt agcaattaag caaaggaaact tgatatattg tatcaagtta ttgaatttgc 11940
456 tcatttttaga acttttttca actctattag ctataggaat ttatggatta atttatcaat 12000
458 taagtaataa acatttgata ttttatggat atgctgtaat tttactaaca gcttcaatgc 12060
460 tcattcttta tctgattcac ttagttgtag tatttttgtt tggcaatagt gctaataattg 12120
462 ggttggggat tgctgaatct ttactatctg ctttgcctt gacagggtta ggagatggta 12180
464 tctggcaatt tattccttgt gcttggggta ctgcctaat gggtagctta ataaatctgt 12240

```

RAW SEQUENCE LISTING ERROR SUMMARY      DATE: 08/03/2005  
PATENT APPLICATION:    US/10/790,914A      TIME: 14:58:47

Input Set : A:\UAB17404.ST25.txt  
Output Set: N:\CRF4\08032005\J790914A.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:20; Xaa Pos. 2,3,5,7,8,11,18,21,23

**VERIFICATION SUMMARY**

DATE: 08/03/2005

PATENT APPLICATION: US/10/790,914A

TIME: 14:58:47

Input Set : A:\UAB17404.ST25.txt

Output Set: N:\CRF4\08032005\J790914A.raw

L:1948 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:20 after pos.:0

M:341 Repeated in SeqNo=20